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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NATNAEL, PAULOS M	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/695,873	ALBERTELLI, LAWRENCE E.	
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-5* is/are allowed.

6)☒ Claim(s) *6-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **6** and **7** are rejected under 35 U.S.C. 102(b) as being anticipated by Hibbs et al. U.S. 5,508,803.

Considering claim **6**, the claimed "plurality of sub-fields, respective sub-fields including a plurality of features, said plurality of features of respective sub-fields of said plurality of sub-fields having a progression of image feature size and pitch", is met by Fig.1, which shows a progression of size and pitch from left to right up to the center field 16 and on to the subfield 12, which has the smallest feature size and pitch. As to the claimed "...encompassing the spatial resolution of said imaging system, referred to an object plane of said imaging system", Hibbs discloses on col. 3, lines 66 to col. 4, line 17 that "The pitch is chosen in the Starikov exposure monitor to be below the resolution of a lithographic exposure tool used therewith, so the lines appear to blur upon imaging. The line-to-space ratio varies across exposure monitor 10, so that the net effect is that of a single, broad, diffuse line with linearly varying optical intensity on each side of the center 16...As the resolution of the exposure tool improves, the line size needed within exposure monitor 10 becomes smaller, straining the ability of the mask fabrication tool

to faithfully create the exposure monitor and the ability of the pattern verifier to verify the lines in the exposure monitor." [Emphasis added by examiner]

Considering claim **7**, wherein said features include lines and spaces, is met by the lines and spaces in Figs. 1 and 2.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **8-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hibbs, U.S. Pat. No. 5,917,987 in view of Bentley, U.S. 3,853,403.

Considering claim **8**, further including indicia indicating a resolution corresponding to feature size of features in a sub field;

Regarding claim 8, Hibbs does not specifically disclose indicia to indicate resolution. However, imaging the indicia or numeral or legends to indicate a function, or to use numerical units on the screen or target image to indicate the value or range of a parameter is notoriously well known in the art. In this regard, Bentley discloses a compound optical-sensor system for visually observing and photo electrically sensing

coded indicia, wherein the coded indicia are imaged on aperature of a mask. It would have been therefore obvious to the skilled in the art at the time the invention was made to modify the system of Hibbs by adding numerical units or indicia within the target image to indicate its resolution or other parameter corresponding to preferred range of values in order to make the inspection of the target image of fig.1 easier for an operator who would then be able to quickly compare and determine the resolution (or other parameters) of the target image by inspecting the numerical values included therein.

Considering claim **9**, including indicia indicating a resolution corresponding to pitch of features in a sub field.

Regarding claims 9, see rejection of claim 8;

Considering claim **10** and **11**, wherein said indicia is a human readable number;

Regarding claims 10 and 11, see rejection of claim 8.

Considering claim **12**, including reference numbers corresponding to resolution of said imaging system and a further indicia.

Regarding claims 12, see rejection of claim 8.

Response to Arguments

5. Applicant's arguments filed 9/17/04 in relation to claims 6-12 have been fully considered but they are not persuasive.

In response to applicant's arguments, the recitation "Moire fringes" in claim 6 has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Applicant's representative in his remarks of 9/17/04 noted that "the present office action applies prior art first cited in the first office action of March 17, 2003, in the application but not previously applied in that action or any intervening action". The MPEP does not preclude or prohibit applying a reference (in this case, Davis) that was cited but not applied in the first or intervening office actions. Nor does the MPEP prohibit changing the rejections accordingly from a rejection based on 35 USC 102 to 35 USC 103 or vice versa, if and when such a change is deemed necessary by the examiner. The reference to MPEP 707.02 is noted.

The applicant claimed that "the examiner has not responded in any way " to the argument presented in the January 26, 2004 response in regards to Hibbs et al. The text in question referred to by Applicant's representative as "bridging" pages 8 and 9 of the response filed on January 26, 2004 reads as follows:

"Thus, it is respectfully submitted that the pattern relied upon by the Examiner does not have a plurality of sub-fields and is limited to a single pitch but even if

considered to have a plurality of sub-fields, each sub-field would have only a single feature (e.g. a line and a space or the boundary between them, each being thus incapable of causing a Moire' pattern or Moire' fringes) and presents only a single pitch (either singly or in combination) which must be below the resolution capability of the system (which also prevents causing Moire' fringes as well as failing to encompass the resolution of the image capture device, as claimed) in order to function as intended. In other words, while it is believed that a fair interpretation of Hibbs indicates that Hibbs does not teach a plurality of sub-fields, if Hibbs is interpreted to teach a plurality of sub-fields" in Figure 1, the sub-fields do not each have a plurality of features" nor do they present a progression of image feature size and pitch" or a "progression" encompassing the resolution of said imaging system" and, in any case, cannot produce Moire' fringes (by which resolution is determined by inspection, as recited in claims 6 and 7) consistent with the intended mode of operation disclosed by Hibbs/starikov. Thus, Hibbs clearly does not anticipate the invention as recited in claims 6 and 7 and, in view of the precedent of In re Gordon, 221 USPQ 1125 (Fed. Circw 1984), Hibbs cannot properly be modified to answer these claim recitations, even in view of additional prior art, since the intended function would be necessarily precluded, as explicitly stated in the reference relied upon. "

Examiner's response, in the "lengthy" advisory, reads:

"Hibbs et al. discloses a method and apparatus for monitoring lithographic exposure. Hibbs et al clearly illustrates in fig. 1 varying feature size or line width and pitch. And, contrary to Applicant's assertion, column 3, line 59 does not disclose constant pitch, as

Applicant asserts. Instead, the passage discloses that the center region has a width of .8 microns while the other regions have 0.4 microns. There is no constancy there. Specifically, Hibbs discloses a mask structure (fig.1), having different feature or size (line-width) and pitch, not a single feature as Applicant alleges. Hibbs does not disclose these line are the same feature. In fact, it is clear from Fig.1 that the stripes have different features and different pitch to the right and left of the center field 16. Hibbs also discloses that the pitch is chosen in the monitor to be below the resolution of a lithographic exposure tool used therewith. (col. 3, line 66 thru col. 4, line 2) In other words, the resolution of the tool is directly linked to the result or the parameters of the target. Therefore, the argument is not persuasive, because the resolution of the camera or imaging system and the resolution of the target displayed cannot be separated, the latter depends on the performance of the former."

Hence, it appears that because the Examiner didn't agree with the Applicant's representative, the attorney insists the response was "lengthy" and that the Examiner never responded to the arguments "bridging" the said text. The examiner still does not agree that the Hibbs et al reference fails to disclose the claimed limitation in claim 6. The examiner believes Hibbs et al clearly illustrates in Fig. 1 varying feature size/line width and pitch. Given a reasonably broad interpretation, the lines 12-16 are considered subfields. The subfield 16 has the widest feature size, while the subfields 12 (on both sides of exposure 10) have the smallest. The size of the pitch for 12 and space 14 is not same as the pitch for the next one. Center 16 again has widest pitch, and so on.

Furthermore, please note that a bar code (see for example the bar code on the Hibbs et al. reference or any U.S. Patent), again, given a reasonably broad interpretation, may read on claim 6. The bar code has a plurality of subfields having plurality of features and a progression (read to the left or to right of any given subfield) of feature size and pitch showing the spatial resolution of the bar code reader that sits on examiners' desks in the patent office which is used to read the bar code on a patent.

Examiner therefore submits that the arguments presented by the applicant have been adequately addressed. If the Applicants have any further questions or concerns, they are welcome to contact the examiner at the phone number given below to discuss the Office Action.

Allowable Subject Matter

6. Claims **1-5** are allowable over the prior art.

7. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to discloses a method of measuring resolution of an imaging system, the method comprising the following steps: imaging a target including a plurality of subfields, respective sub-fields of said plurality of subfields providing a progression of image feature size and pitch encompassing the spatial resolution of said imaging system, to produce a captured image, inspecting said captured image for presence or absence of Moire patterns in sub-fields of said captured image, and determining resolution of said imaging system from feature size and pitch in respective sub-fields inspected in said inspecting step, as in claim 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
February 21, 2005

PAULOS M. NATNAEL
PATENT EXAMINER